

## Scared of the dark

Francis Bacon wrote in 1625: "Men fear death as children fear to go in the dark; and as that natural fear in children is increased with tales, so is the other." Fear of the dark is common in children and often in adults.

Hence the long popularity of the humble night-light, once found burning cheerfully in a child's bedroom, but now largely replaced by a low-power electric lamp.

Why people fear darkness is a complex issue with no clear answers. No doubt there resides in humans a built-in instinct to avoid things and folks who lurk and roam in dark places. Night, after all, is traditionally the time when thieves and murderers ply their professions and when, in many parts of the world, the hunters of the savage animal world go about tracking their prey.

Moreover, there are legends and folk tales current in society which we inherit from our ancestors who talked of "the very witching hour of night / when churchyards yawn and hell itself breathes out / confusion to this world". Every child has a rich recollection of stories told at bedtime by well-meaning parents and nurses, some of them well calculated to breed nightmares in the more imaginative. And today children may watch horrific scenes on the small screen. Little wonder, then, that fear of the dark should affect nervous individuals, particularly in childhood.

A clinical review published in the *British Medical Journal* for 15 January remarks that fear of the dark is a common complaint of pre-teenage children. The phenomenon is distinct from the night terrors that induce acute agitation in a young child who appears to be awake but is in fact still sleeping. A conscious child can experience fear of the dark in dimly lit situations.

Sometimes the normal period over which sight adapts from light to dark is greatly prolonged. In a child yet unable to talk lucidly, this phenomenon may be interpreted as fear of the dark and, therefore, illogical. Another possible factor is true night blindness, or nyctalopia, in which there is a lack of rod photofunction in the retina. Among its causes is the rare congenital stationary form, which is supposed to be three times commoner in boys than in girls, and is therefore probably linked to the X chromosome. Congenitally stationary night blindness is non-progressive, impairing night vision and, to a much lesser extent, daytime central visual acuity. It is diagnosed by a careful history-taking.

Fear of the dark is accompanied by mobility problems at night and the urge to draw curtains earlier as night falls. Sometimes fear of shadows may be included. The suggested remedy is allowing

the child control of lighting arrangements, which is claimed to improve the life of the family as a whole. It is perhaps noteworthy that, given our great dependence on pharmacotherapeutics, no one has suggested that there is in this situation any demand for an appropriate drug treatment programme.



## Playing safe

At a meeting of the United States national academies and other bodies concerned with scientific research in Washington this January, some agreement was reached on drawing up voluntary national guidelines governing the publication of findings that might aid terrorists, according to a report published in *Science* for 17 January. The question became important after wide debate arose in response to the tampering of mail with anthrax cultures.

Presidential science adviser John Marburger claimed that nuclear scientists and mathematicians had a long history of discretion when it came to protecting nuclear technologies and computer codes. But he added that the rules adopted to achieve this might not work in the field of biology, since they could not limit the flow of basic data essential to develop products that might be desirable or otherwise. To identify and censor sensitive findings any government needs the immediate help of the biologists themselves. Reputable journals already award special scrutiny to papers that might raise security concerns, although government officials might not judge the precautions adequate. There is a danger that political policy-makers might impose onerous and ineffective rules if they panic in the face of what they visualise as a threat.

To deal with this situation, the scientific community needs to work together. Unless there is international co-operation in drawing up guidelines for controlling information when desirable, the national authorities concerned are likely to devise and impose rules that would seriously disadvantage essential legitimate research.

## Strange disorder

Despite the efforts of generations of researchers to understand the cause of schizophrenia, it remains a mystery, according to a paper in *Science* for 17 January. Efforts to unravel the possible genetic basis have ended in frustration, and there is at present no sign of a cure. Nevertheless, concentrating attention on the components of schizophrenia, especially those concerned with cognition has achieved some significant gains.

The most undesirable feature of the disease is psychosis, characterised by delusions and hallucinations, but there are other aspects such as emotional flattening and disordered thinking. The psychosis itself has to some degree been controlled by drug therapy, and this has enabled clinical researchers to lay bare the cognitive problems that persist. And studies of the brains of schizophrenic patients have shown why the disease is so intractable. The frontal and temporal lobes are shrunken, in some areas the neurons may be misarranged, and the neurological circuits based on dopamine transmission may become erratic.

In spite of some advances in knowledge, the mechanism of schizophrenia remains totally unknown. Many genetic studies have failed to reveal any more than a minute contribution by any one gene. There must, however, be a strong genetic component since a child of someone suffering from the disease is 10 times more likely than the child of an unaffected person to develop it later in life. And, apart from a few common brain changes, anatomical studies offer ambiguous explanations. Researchers are concentrating attention on the cognitive disruptions that upset short-term memory, attention and the functions needed for planning and problem solving. Studies in progress are testing attention, working memory, decision making and problem solving — the so-called "executive functions". Ability to group words into categories is used as an index of information organising.

The shift in focus towards cognitive dysfunction is reflected in the search for new drugs to combat the disease. Compounds that target the dopamine system are becoming important. Nicotinic receptor agents are being investigated because it has been noted that the tendency of schizophrenia sufferers to smoke may indicate an unconscious effort at self-medication. Glutamate, too, is of interest, since it is the brain's main excitatory neurotransmitter, and shortage of glutamate has been linked to both psychotic symptoms and impairment of cognition.

Some neural irregularities appear to be established during foetal development, although schizophrenia usually emerges in late adolescence, so that intervention early in life might well avert its development. This might make possible the avoidance of the process of cognitive impairment, psychosis and social isolation. Nevertheless, the experts warn that the effective prevention of schizophrenia may still be a long way off.